



TAPPING INTO CONSUMERS' PERCEPTIONS OF HEALTH RISKS

IN MUNICIPAL WATER SUPPLIES

DIANE DUPONT, BROCK UNIVERSITY
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Canadian
Water
Network

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WHY DID WE DO THIS RESEARCH?

Municipal drinking water systems in Canada undergo rigorous and frequent water quality testing and deliver high quality tap water to consumers. For example, the 2013-2014 Ontario Drinking Water Report Card issued by the Ministry of the Environment and Climate Change showed that 99.83% of more than 500,000 tests in residential drinking water systems were in compliance with microbiological, chemical and radiological standards identified in the Safe Drinking Water Act.

However, experts estimate that Canadians spend approximately \$590 million a year on bottled water. Consumer experiences with discolouration, sediment, and unpleasant smell or taste have led to the use of in-home filtration devices or bottled water. Additionally, high-profile contamination events — like Walkerton, Ontario (2000) and North Battleford, Saskatchewan (2001), as well as recurrent media reports on boil water advisories, have heightened public awareness of health risks.

WHAT DID WE DO?

This project tracked consumer perceptions of water quality and consumption choices in the Canadian context and examined trends over time and across regions in Canada. A series of focus groups and surveys over the last decade provided baseline and trend data on the experiences, perceptions and water consumption choices made by Canadians in geographically-representative households.

The survey findings were compared in three different ways:

RESULTS ACROSS CANADA OVER TIME:

Responses from 2004 (when Walkerton and North Battleford events were still recent and source water protection legislation was underway) were compared to surveys in 2009 and 2012.

REGIONAL RESULTS:

Responses were compared in four regions — Atlantic Canada (New Brunswick, Nova Scotia, Newfoundland and Prince Edward Island), Quebec, Ontario and Western Canada (Alberta, British Columbia, Manitoba and Saskatchewan).

RESPONDENT CHARACTERISTICS:

The results were also separated by characteristics like education and gender.

WHAT DID WE FIND?

NATIONWIDE RESULTS

Consumers reported that the occurrence of discolouration and sediment in their tap water decreased from 14% in 2004 to 7% in 2012. The occurrence of unpleasant smells or tastes also decreased from 30% in 2004 to 20% in 2012, as well as hard water problems from 22% in 2004 to 16% in 2012. The number of respondents who said they do not trust their water supplier to ensure the safety and quality of their water also decreased, from 23% in 2009 to 19% in 2012.



Respondents were asked to allocate their total water consumption — i.e., tap, filtered or bottled. Consumption of tap water increased steadily over time, from 39% in 2004 to 53% in 2009 and 56% in 2012. Bottled and filtered water purchases amounted to less than 1% of respondent incomes, decreasing from 0.4% to 0.2% from 2004 to 2014.

In 2004, 31% of respondents purchased bottled water because of health concerns. Consumers who expressed higher levels of health concerns about their tap water tended to spend more on bottled and filtered water and have greater distrust in water utilities. 57% of respondents thought that drinking bottled water was safer, while only 7% thought that drinking tap water was safer. By 2009 trust in tap water had increased, with 40% of respondents considering bottled water safer and 18% considering tap water safer. By 2012, convenience was the dominant reason stated for bottled water use (59%).

9% of consumers believed that there was no need for safer water in 2004, yet in 2012, this number had nearly doubled to 17%. In terms of willingness to pay, 40% of respondents in both 2009 and 2012 said that the public should not have to pay for better water quality. However, 69% of respondents in 2004 and 2012 hold the opinion that businesses that worsen water quality should pay for treatment. This suggests that the members of the public do not see a linkage between household use of water, including uses that may lower water quality such as waste disposal, and potential adverse impacts upon water quality. Utilities that engage in efforts to adopt full cost pricing of water should ensure this linkage is clear to consumers through the use of clear, targeted messaging.

	BOTTLED	FILTERED
2004	\$126/year	\$26/year
2009	\$134	\$22
2012	\$ 89	\$20

Table 1: Average household expenditures on filtered and bottled water

REGIONAL RESULTS

Over 10 years, the Atlantic Provinces experienced the greatest reduction in occurrences of rusty water and sediment (from 20% in 2004 to 5% in 2012). All other regions saw similar, but smaller, reductions in these incidents. In 2004, 1 in 3 respondents in all regions but Quebec had experienced problems with either the taste or smell of their tap water, but this decreased to 1 in 5 by 2012.

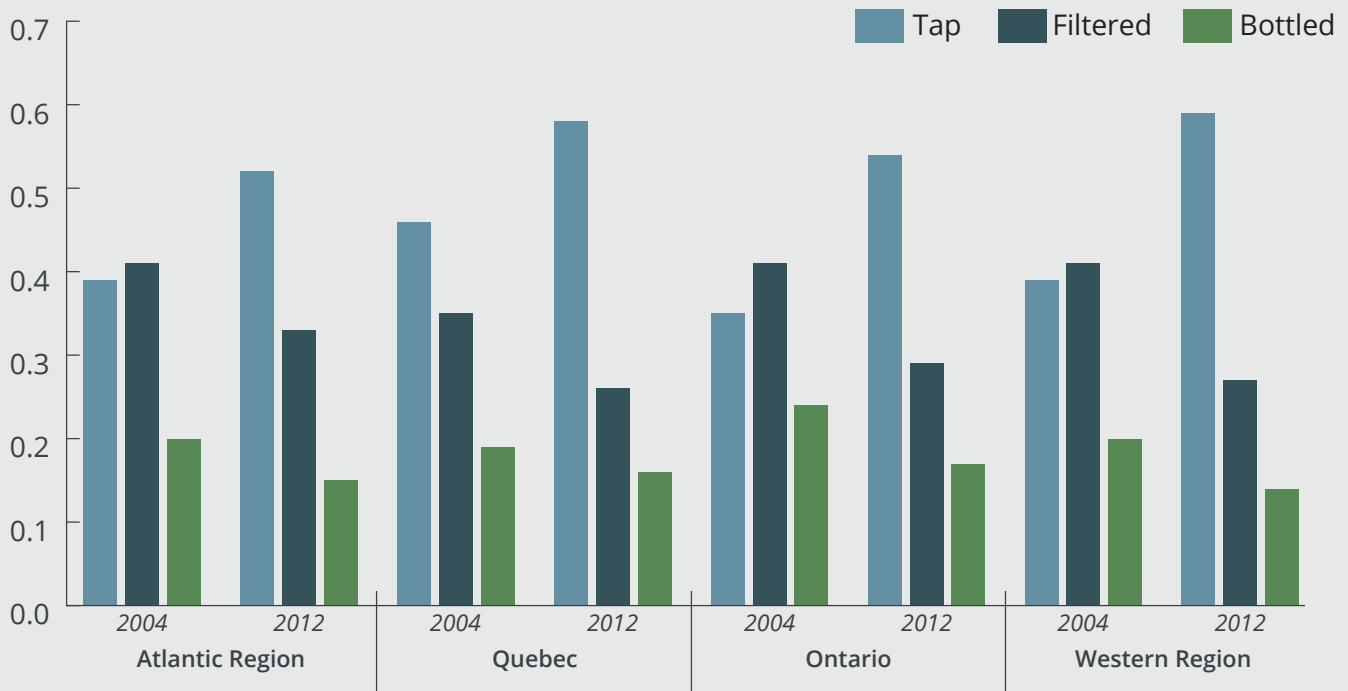


Figure 1: Household water consumption of tap, filtered and bottled water by region

REGION	YEAR	BOTTLED WATER PURCHASES	
		(\$ PER YEAR)	% OF INCOME
Atlantic	2004	117	0.5
	2009	139	0.4
	2012	68	0.2
Quebec	2004	89	0.3
	2009	122	0.3
	2012	88	0.2
Ontario	2004	147	0.4
	2009	144	0.3
	2012	101	0.2
Western	2004	133	0.3
	2009	129	0.3
	2012	80	0.2

Table 2: Average Household Expenditures on Filtered and Bottled Water

People in all provinces in 2012 are consuming more tap water and less bottled and filtered water (see Figure 1). The degree of trust that people in each region have in their water utilities slightly increased between 2009 and 2012; this increase was highest in the Western Provinces.

In 2004, there was a wide variation in average household spending on bottled water, with residents of Ontario spending the most (\$147/year) and residents in Quebec spending the least (\$89/year) (see Table 2). Spending on bottled water increased in Quebec and the Atlantic provinces between 2004 and 2009. The percentage of income spent on tap water substitutes was highest in the Atlantic region (0.5% in 2004) but fell across the country to a low of 0.2% in 2012.

Respondents were asked to report why they purchased bottled water: convenience, taste or health concerns with tap water (see Figure 2). The proportion of respondents citing health concerns fell in all regions from 2004 to 2012, except for Quebec. In 2004, the Atlantic Provinces cited a larger percentage of health concerns (56%) but this had fallen by the largest amount in 2012.

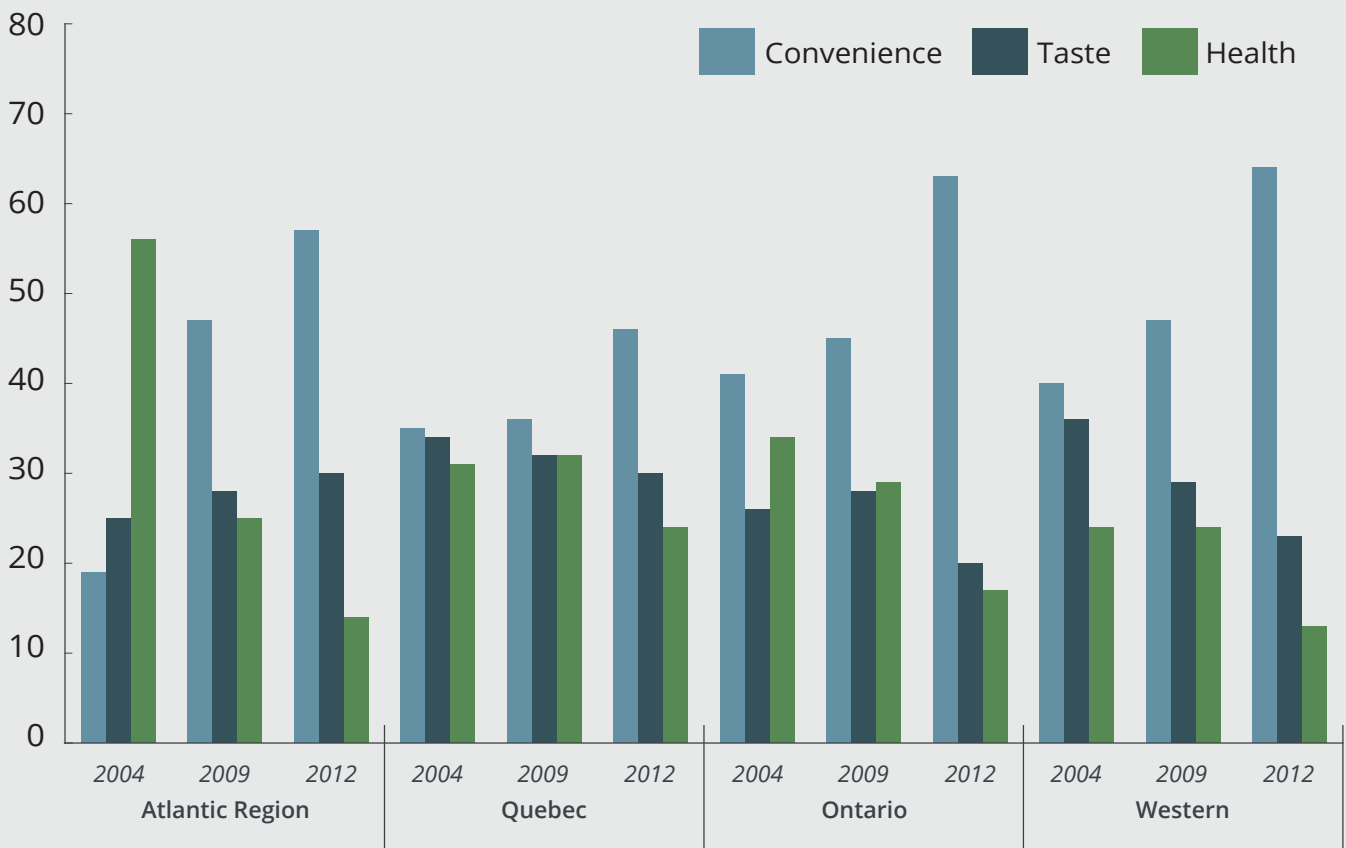


Figure 2: Reasoning for Purchase of Bottled Water by Region

RESPONDENT CHARACTERISTICS

Across Canada, spending on bottled water was higher in 2004 for respondents who had no post-secondary education (\$129 per household versus \$119 per household). However, by 2012, respondents with no post-secondary education reduced their spending to \$91 per household.

The number of households that are choosing to boil their water before use has increased in all regions from 2004 to 2009. In 2009, 7% of surveyed households in Ontario reported always boiling water prior to consumption (up from 4% in 2004); the Western region almost doubled to 5.3%. Respondents with high school education are more likely to boil their water prior to consumption; however, respondents with post-secondary education are slightly less likely to trust their water supplier.

Over time, respondents agreed more strongly that water treatment decisions should be left to experts. In 2009 an equal number of males and females (23%) reported that they did not trust their water supplier to ensure the safety and quality of the water they drink. However, by 2012 women (21%) were more likely to distrust their water supplier than men (17%) and women increased their belief in the need for safer tap water to a greater extent than men did. Men and women also differ with respect to the other ways that water treatment should be financed, with men more likely to favour tax increases and user fees.

WHAT DO THESE FINDINGS MEAN FOR MUNICIPAL DRINKING WATER PROVIDERS?

A number of different information sources appear to play a role in the formation of a consumer's subjective perceptions about potential health risks associated with water. On the one hand, personal experience with rusty water or unpleasant smells/tastes leads consumers to indicate a greater degree of health concerns from drinking water. On the other hand, widespread news reports about rare events such as the E Coli contamination in Walkerton, Ontario, can make consumers more wary of their tap water. Water utilities should consider making greater efforts to provide relevant information in a neutral way in order to help educate customers.

While one might be inclined to dismiss subjectively held risk perceptions as inconsistent with objective measures, it is clear that these perceptions result in choices about where and how much money to spend on substitutes for tap water. While the proportion of those indicating that bottled and home filtered water are safer than tap water has fallen over time, there are still relatively large numbers of consumers who identify these alternative sources of water as safer. The presence of lingering health concerns is supported by the fact that proportionately more households are boiling their water prior to consumption. This latter trend is somewhat concerning since consumers with lower levels of education appear to be disproportionately represented in this trend.

Noteworthy, however, is that all of these efforts provide support for the view that consumers are willing to spend money to obtain water they believe to be safe. Spending on infrastructure improvement projects ought then to be supported by consumers. However, according to the survey results, 40% of respondents feel they should not have to pay for water quality improvements at the municipal level. Since most water utilities are facing infrastructure-spending needs in the future, it is important to understand this apparent disconnect between how much people spend on tap water substitutes for themselves and their stated unwillingness to pay for better infrastructure. Water supply can be a complex issue; so finding ways of communicating the role of the water utility in ensuring safe tap water is worthwhile pursuing. The use of visuals or online-videos can assist in this endeavour.

While tap water use is a relatively small proportion of a household's overall water use, the choice to use substitutes and/or conduct one's own efforts to "purify" water through home boiling has potential implications for broader water use within the home and, therefore, possibly, on utility revenues. While the percentage of people surveyed who said that they do not trust their water supplier to ensure the safety and quality of their tap water has fallen over time, almost 1 in 5 people surveyed still held this view in 2012. Moreover, women and more educated people identified as being less likely to trust their water supplier. In addition to providing more information to educate customers, much care needs to be given to the way the messages are framed. In particular, recognition of the needs and level of understanding of different types of customers will improve the uptake of the information. For example, graphics indicating how dollars are put to work on improvement projects in close proximity to customers may lead them to greater recognition of the benefits to them and consequent support for water bill increases.

Finally, it is clear that there are regional differences in experiences, in risk perceptions, and in choices made by tap water consumers. These findings support the value of targeted communications to different groups of customers in order to provide the most useful information in the appropriate way. Should improvements in aesthetics be the focus of the information campaign? Should data about testing be provided? In order to answer these questions, water utilities need to put resources into obtaining a better understanding of their own customers in order to make the messaging (and support for future infrastructure spending) most effective.



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